

## REMOVAL OF TONSILS BY ELECTRO-COAGULATION

By ALBERT C. CARLTON, M. D., San Francisco

*While electro-coagulation may have some salient features to commend it, experience has taught me that it is not a procedure to be employed in every case.*

*The operation can be performed in the course of a few minutes under local anesthesia.*

*The destruction of tonsils by the electric current is not new, but recent improvements in apparatus and methods have brought it into prominence.*

*The character of the current is of the utmost importance. Electro-coagulation of tonsils will find its place, when methods of operation and apparatus will have become standardized, for selected cases as herein mentioned.*

*DISCUSSION by C. F. Welty, San Francisco; F. L. Rogers, Long Beach; C. C. Stephenson, Los Angeles.*

When advocates for the removal of tonsils by electro-coagulation reported the possibilities of this method, the thought arose, was it not enthusiastically over-rated and were not some of its undesirable features suppressed. As any new method courts criticism from adherents of methods in vogue, it gave me the desire to investigate, and the result of my observations are herewith presented.

The literature on the subject, which attracted my attention, gave one the impression of ease of performance as simple as an ordinary office treatment. It seemed as though the physician need only to acquire the special apparatus devised for the purpose and proceed to remove any and all tonsils that came his way without further ado.

While electro-coagulation may have some salient features to commend it, experience has taught me that it is not a procedure to be employed in every case by anyone, but might become an adjunct to those accustomed to performing tonsillectomies in certain selected cases, when the proper technic and understanding has been acquired.

The operation itself can be performed in the course of a few minutes under local anesthesia, but the after effects are of consequence, and to destroy tonsils completely at one operation requires skill and experience. Post-operative conditions are comparatively the same as those following tonsillectomies, varying with the individuality, and the attendant discomfort must be cared for accordingly. There is also the additional necessity for disposing of the tonsil slough and caring for the inflammation produced by the electric burn which in some instances, if one is not careful, affects the surrounding pillars.

The acquisition of a working knowledge for the control of the current is incumbent upon the operator, that he may keep it confined within the tonsil tissue to be destroyed. The current is invisible and unlike the galvano-cautery, which is red hot, shows only the result, the coagulated area affected by it.

Electro-coagulation may be defined briefly as the application of the D'Arsonval high frequency current, measured by milliamperemeter, controlled by suitable apparatus, producing sufficient heat by resistance in its passage to coagulate and destroy living tissue.

Under the influence of a local anesthetic, coagulation is painless, hemostatic, sterilizing, without shock or physical taxation and commends itself to timid patients and those who for constitutional reasons should avoid general anesthesia, loss of blood or mental stress. Likewise to those who cannot afford

hospitalization, loss of time from work or loss of income, electro-coagulation has its useful purposes.

The destruction of tonsils by the electric current is not new, but recent improvements in apparatus and methods have brought it into prominence and for the past eight months it has been employed by me in at least fifty instances for the destruction of tonsils, turbinates and pharyngeal hypertrophies.

The apparatus used consisted of a Fischer Diathermy apparatus, with foot control, insulated cords, needle holder and flexible metallic needle as devised by Plank. An assistant to read the milliamperemeter and note the duration of each application, by clock, is essential to the proper control of the current.

The local anesthetic employed in each case was a solution of Butyn  $\frac{1}{2}$  per cent with epinephrin, injected into the tissues to be destroyed, no topical application of any kind being used, and the anesthesia was instantaneous and sustained for several hours. Approximately two milligrams per tonsil was injected without systemic reaction of any kind being noted. The amount of tissues to be destroyed at one sitting is important. Small cryptic, imbedded, fragile tonsils or tonsillar remnants of previous operations, so difficult to dissect, are ideal for electro-coagulation. Hypertrophied tonsils are not as suitable for destruction at one sitting, but can be done in two or more stages at intervals of three to four weeks, because the smaller the area to be destroyed the less current is required and the less reaction results and the minimum discomfort exists. The milliamperemeter is absolutely necessary for measuring the quantity of current used.

My experience shows that from 300 to 400 milliamperemeters destroy tonsillar tissue, when applied from ten to thirty seconds each application, according to the density of the tissue. Duration of the application depending upon whether the tonsil was soft, fragile or fibrous and bound with adhesions such as remnants left from previous operations. This practice, and the first insertion alone will tell.

The character of the current is of utmost importance. The apparatus can be adjusted to deliver the same millampereage with different types of current. A coarse vibrating current may produce a greater invisible radiation affecting surrounding pillars, than a soft, smoothly adjusted current. While it would not destroy adjacent muscular structures, inflammation is produced, which adds to the discomfort. Muscular tissue would be destroyed if the current exceeded 500 to 600 milliamperes, especially if its use was unduly prolonged. The softest current that will deliver 300 to 400 milliamperes by careful adjustment of the apparatus is most desired.

The duration of the current can be best gauged by the appearance of the areola of coagulation about the inserted needle. A soft current needs a longer application of the same milliamperage than a coarse current, which coagulates quickly, sometimes too quickly for best control. It must be borne in mind that the current passes into the tissue from the needle in all directions, including the point, and one must exercise care and judgment in the insertion of the needle as to depth and direction.

The depth of the tonsil must be estimated and at least one-eighth inch radiation allowed for in all

directions, including the tip, so that no damage be done to pillars or floor. The Plank needle is flexible and can be bent in the direction best suited to parallel the pillars, not point at or into them. On the average the needle need be inserted about one-quarter inch, and not in excess of one-half inch, to destroy small cryptic tonsils to the capsule, other sizes in proportion.

Thus, with the proper equipment, the patient with tonsils anesthetized, seated in a non-metallic chair or auto-condensation seat, with a good light to reflect into the throat; a wood or fiber tongue depressor and the assistant ready to read the milliamperemeter and note the time; consideration having been given to size, depth and density of the tissue; the apparatus adjusted to deliver the milliamperage and character of current before mentioned, the operation is quickly performed.

When the effects of the anesthesia have worn off, such pain and discomfort as may exist for the subsequent twenty-four hours or so, can be cared for as with tonsillectomies.

About the fourth or fifth day the sequestrum formed from the coagulated tissue partially liquefies and a fetid odor is noted from the necrosed tissue. This can be modified with antiseptic and deodorizing gargles. For this purpose a gargle called "Formula B" has been used by me, as an antiseptic, analgesic and deodorant, with complete satisfaction.

Under no circumstance should the slough be forcibly removed or quantities of coarse food be taken during this period, as it will cause bleeding. When the slough separates it can be gently wiped out. The fossae should be cleared by the tenth or twelfth day and healing is complete within a few days thereafter, leaving the contour of the throat and pillars in normal condition, without deformity or adhesions. During the sloughing period the patient may resume his occupation with little discomfort.

Quite different from tonsillectomy, should for any reason, small particles of tonsil tissue remain, it is a very small matter to dispose of them by electro-coagulation, without trouble to the operator or loss of time or expense to the patient. The removal of small particles of tissue cause little or no reaction and need no subsequent attention.

For the patient with systemic disease due to focal infection with suspicion directed to tonsils having no visible evidences of infection where one is hesitant to incur unnecessary expense, electro-coagulation can be recommended as an easy, economic method of disposing of a possible cause with the least amount of stress upon the already diseased burdened system.

I venture to conclude that electro-coagulation of tonsils will find its place, when methods of operation and apparatus will have become standardized, for selected cases as herein mentioned.

177 Post Street.

#### DISCUSSION

**Dr. Cullen F. Welty, M. D.** (210 Post Street, San Francisco)—I am very much interested in what Dr. Carlton has to say regarding removal of the tonsil by high frequency current.

In the first place I have never used this procedure for the simple reason that it is so much easier for the patient as well as for the surgeon to remove them in a different way. To my notion there might be

some excuse for removing a piece of tonsil left at a previous operation, in this way.

However, the high frequency current operates best in new growths; that is the new growth is not so resistant to the current as the normal tissue. In other words, the new growth will be destroyed and the normal tissue will remain. I have demonstrated this repeatedly in the removal of carcinoma of the lip as well as carcinomata about the face.

**Francis L. Rogers, M. D.** (Markwell Building, Long Beach)—This paper of Dr. Carlton is interesting in its detail and it seems to me timely; also as it has quite ably brought to our attention a method of treatment of tonsils which I believe should receive the unqualified disapproval of this section.

Electro-coagulation is none other than a chemical burn. It produces molecular stasis and death in the tissue to which it is applied. The dead part is not removed but is left to become absorbed or slough out. To use this method skillfully, i. e., destroying only the tonsil tissue without injuring other parts, I believe requires as great or greater skill than other well recognized and more surgical methods to tonsil removal.

It is spectacular in that it carries the "no knife" idea to the patient, which is ample reason for its being adopted by quacks and cultists as something "so different," when as a matter of fact it is, in unskilled hands, simply another form of bungling surgery. The electro-coagulation wound becomes foul because of the slow decay and sloughing of the tissues and takes longer to heal than a like sized wound made by knife or snare. The adjacent tissue is often devitalized in some degree and occasionally deep burns are produced. The method is dangerous also because the current produces in some measure its own anesthesia, and thereby the operator may be misled in the extent of tissue destruction he is producing.

Personally I have no experience with this particular method, but the cases I have seen have rarely shown an entire removal of the tonsils. I can scarcely conceive of a type of case where its use would be preferable to other quite as simple, more safe, and more surgical methods. I believe that practically all electrical treatment, including the x-ray, for tonsils have been quite generally disappointing in their results to the throat specialist, and this one I believe should receive our hearty condemnation.

**C. C. Stephenson, M. D.** (812 Bank of Italy Building, Los Angeles)—I am sorry Dr. Carlton did not mention in his paper the use of the electro-coagulation method in the management of that class of tonsil infections where the crypts are filled with foul debris, complicated with enlarged glands (adenitis) in the lymphatic glands and sub-maxillary glands, as well as the mastoid glands.

I had occasion this morning to remove the tonsils from a young Spanish woman that I believe to be about as nearly rotten as could be without an actual necrotic process already in evidence. The crypts in this case were filled with the foulest smelling debris that it has been my lot to ever see.

To be sure, I feel that the electro-coagulation in a case like this, might not do the same work that the entire enucleation does.

I was in hopes that the doctor would mention this class of cases, and I have presented this one with the idea of bringing out the point as to which is the best method to pursue in dealing with cases such as I have outlined.

**Dr. Carlton** (closing)—In presenting my experiences with electro-coagulation I was prompted to do so on account of the extravagant claims and apparent lack of understanding of the consequences of attempting the use of the high frequency current as a destructive agent, without due deliberation and understanding.

I want to again emphasize that it is the anaesthetic that makes it painless, not the coagulation; the performance of the operation may be harmless and bloodless, but the after results may not be. Caution and understanding are urged before attempting its use; to

trifle with it, without the necessary knowledge, is dangerous.

I had hoped that someone who had made use of this method could contribute his experiences, for little seems to be known about it from actual experience. I have set down such procedure as I know to be safe from actual experience so that others might have something to guide them, should they see fit to try for themselves.

With regard to the simplicity of the procedure as mentioned by Dr. Welty, nothing is simpler than the insertion of the needle and pressing the switch, provided, however, that all that is mentioned in my paper has been given consideration to produce the desired result. What is more seductive than the removal of tonsils with no knife, no hospital, no pain, no anxiety or distress from anaesthesia, no additional expense, no loss of time from work?

Dr. Rogers' remarks are an exemplification of the general opinion of those who have condemned electro-coagulation from hearsay. In answer to them, I would say, why condemn when we do not know? The section is essentially to learn of new methods as well as of old ones; old ones so frequently poorly used and always amenable to improvement. I do not advocate electro-coagulation as the successor of all known methods, merely a presentation of a few experiences to guide others and to urge the use of the high frequency by those who have qualified in electrotherapy and above all competent to care for any post-operative contingency such as a throat specialist should be able to do.

### GLIMPSES OF PAST MEDICAL SOCIAL SERVICE WORK AND ITS PRESENT STATUS \*

By PERCY T. MAGAN, M. D., Los Angeles  
Dean College of Medical Evangelists

*The twelfth and fourteenth chapters of the Book of Leviticus quaintly record the offering or "fee scales" applicable to rich and poor.*

*Elisha went so far as to even refuse to receive from Naaman, the Syrian, the Captain of the Host, who was a leper, any compensation whatsoever for cleansing him of his leprosy.*

*A great London divine once stated that the better part of a good sermon always came from the audience.*

*The word "profession," in its ancient and intrinsic meaning, carries the idea of the performance of a sacred and religious duty for the welfare of others, without money and without price.*

*Every agency which will assist in helping the different stratas of society to understand each other, is a positive force for untold good.*

The beginnings of that unique relationship which exists between men and women of the medical and nursing professions and those ranks of society who, for various and sundry reasons, are blessed with but little of this world's goods, lie buried far back in the crypts of the Temple of Time. I use the word "unique" because the shuttle of vital interchange between these two groups is rare indeed, to any great extent, at least, as between most other professions and those in the humble and lowly walks of life. It is seldom that a great lawyer volunteers his services without money and without price to plead the cause of men who are altogether unable to recompense him for his time and effort. Not often is an architect called upon to give of his skill in assisting impecunious families to plan their homes in the most economical and artistic manner. It has even come to be that religious workers, in many instances,

may be divided into two classes—those who preach to the rich, and those who labor for the poor. The engineering profession makes its creations available to all, but to all at a price. On the other hand, in the healing vocations it is the greatest and most skilful practitioners, as well as those not so widely known, who donate a very large amount of time and strength to those from whom they never expect to receive a reward beyond heart gratitude for health restored.

This spirit to spend and be spent, as already stated, had its birth in the dim dawn of history. The writings of the Hebrew Moses enjoined upon the priests, not only religious teaching, but the inculcation of sanitary measures, personal hygiene, dietetics, preventive medicine, quarantine regulations, and therapeutics. The twelfth and fourteenth chapters of the Book of Leviticus quaintly record the offering or "fee scales" applicable to rich and poor. Thus, after confinement, a woman who could afford the same was to bring a lamb and a young pigeon or a turtle dove. If, on the other hand, poverty was her lot, the principles of the code of medical social service governing us today were in force, and such an one was only required to bring two turtle doves or two young pigeons. In other words, the poor woman's bill was discounted by one lamb. Again, when the well-to-do leper was cleansed of his leprosy, the offering or fee imposed upon him consisted of two he-lambs, one ewe lamb, three-tenths deals of fine flour mingled with oil, and one log of oil. But if the leper "be poor and cannot get so much," then he was only to take one lamb and one-tenth deal of fine flour mingled with oil, and the log of oil, and two turtle doves, "such as he is able to get." This reduction amounted to about 60 per cent discount from the regular scale.

In later Bible days, the prophet Elisha went so far as to even refuse to receive from Naaman, the Syrian, the Captain of the Host, who was a leper, any compensation whatsoever for cleansing him from his leprosy. Evidently, the seer was endeavoring to win the idolatrous warrior from the silly therapeutics of the heathen cultists and quacks of his nation and time. Unfortunately, the beauty of the incident was marred by a lack of the social service spirit upon the part of the man, Gehazi, who seems to have been a rapacious and greedy medical student of cultist proclivities, who failed to catch his master's spirit. This young man, like many of his twentieth century progeny, evidently got a greater reaction out of *preying* upon his patients than by *praying* for his patients. When the aged prophet's back was turned he ran after the heathen prince and mulcted him of two talents of silver and two suits of clothes. For his rapacity the solemn decree was pronounced: "The leprosy, therefore, of Naaman shall cleave unto thee and unto thy seed forever."

In the days of the Roman Empire, both Tacitus, the great historian of his time, and Pliny the Elder paid tribute to the spirit of the early Christian Church in tenderly caring for the sick and afflicted among them without money and without price. In an age pregnant with luxury and vice, and of blasé indifference to the needs of the unfortunate, these

\* Presented before the Division of Medical Social Service Workers at the Annual Meeting of the California State Medical Association, 1924.